

Academic Readiness Indicators: Implications for State Policy

COLLEGE BOARD RESEARCH & DEVELOPMENT

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In recent decades, the United States economy has undergone a dramatic shift to a knowledge-based economy that, when coupled with simultaneous, rapid globalization, has created a greater demand for a more educated and skilled workforce. The share of U.S. jobs requiring some level of postsecondary education is expected to grow to 63% in the next decade. By 2018, the United States will need 22 million new college degrees and at least 4.7 million new workers with postsecondary certificates, but it will produce three million fewer degrees than are needed.¹

Evidence suggests that a substantial fraction of the student population in the United States is insufficiently prepared for postsecondary education, which results in a great cost to the nation.² Students' performance on the National Assessment of Educational Progress (NAEP), a nationally representative assessment, is an indication of the challenges that states face in trying to prepare students for postsecondary education. For example, 2009 NAEP data indicate that just 38% of U.S. 12th-graders performed at or above proficient in reading, and only 26% performed at or above proficient in math.³ Data from international academic assessments indicate that students in the United States are being outperformed by other developed nations. On the Programme for International Student Assessment (PISA), 15-year-olds in the United States ranked 17th in reading and 31st in mathematics.

Secondary and postsecondary institutions must address the academic rigor of their programs and why students are not successfully completing postsecondary programs. This brief is intended to support policymakers in achieving the goal that every student graduating from high school is ready for both college and career.

The Importance of Academic Rigor

Graduation from college has been associated with a wide variety of positive financial and societal outcomes.⁴ The United States has seen its relative standing in college graduation rates decline over the last decade. In 1995, the United States was ranked second in the percentage of students who received a postsecondary degree from either two-year or four-year colleges but has since been surpassed and ranked 15th among 25 countries in 2005.⁵ It is estimated that only 40% of adults between the ages of 25 to 34 in the United States have an associate degree or higher.⁶

Evidence suggests that students would be willing to work harder in high school if higher academic standards were in place. In a recent survey, 82% of college students indicated they would have worked harder if the standards necessary to earn a high school diploma had been higher.⁷ Additionally, 62% of college students said they would have taken more challenging courses in at least one academic area had they understood college-level expectations. Last, students who experienced

high expectations in high school were more than twice as likely to feel well prepared for college and to obtain mostly A's; these students were about half as likely to take a remedial course.⁸

College professors estimated that 42% of students are not adequately prepared for college, and 70% of college instructors reported having to devote some of their class time toward reviewing content they feel should have been taught in high school.⁹ Only 28% of college instructors believe that public high schools adequately prepare students for the challenges of college.¹⁰ Similarly, other researchers argued that high school often does not adequately prepare students with the skills required of college-level courses, which are generally faster paced and require students to engage in higher-level tasks.¹¹

Nationally, 28% of incoming first-year students take remedial course work prior to being allowed to enroll in regular college-level courses.¹² The cost of remediation for students enrolled in public institutions in the 2007-08 school year was \$3.6 billion. Moreover, the U.S. could realize as much as \$2 billion in additional earnings in terms of lifetime wages if students who did not complete college due to lack of readiness were able to graduate at the same rate as their peers who did not require remediation.¹³

Defining the Problem

Remedial Courses

One of the major indicators that students lack college readiness is the degree to which they are required to take remedial, or “developmental,” courses in core subjects in their first year. The National Conference of State Legislatures (NCSL) defines remedial education as “classes taken on a college campus that are below college level. Students pay tuition and can use financial aid for remedial courses, but they do not receive college credit.”¹⁴ Remedial courses aim to teach incoming students content that is expected to be learned in high school.

Between the 2007-08 cohort year, 25% of students from four-year public institutions and 17% of students from four-year private not-for-profit institutions reported having to take a remedial course.¹⁵ The most common remedial courses taken are in core subjects such as math, reading, and writing. Most striking is that many students are unaware that they will need to take these courses until they begin planning their schedules, when the university or college determines who must take a placement test.¹⁶

Approximately 73% to 78% of higher education institutions award institutional credit for remedial reading, math, or writing courses.¹⁷ Although enrolling in remedial courses often allows students to earn institutional credits that maintain full-time status, financial aid eligibility, and qualifications for campus housing, these credits do not count toward graduation. This additional course work may lengthen the time required to obtain a degree or increase pressure on financial resources, and hence contributes to markedly lower graduation rates among remediated students. Approximately 69% of 12th-graders who enrolled in postsecondary education and who were not required to enroll in remedial courses graduated with a certificate, associate degree or bachelor's degree. In comparison, the graduation rates for students who required remediation was between 30% and 57%. Among students who attended college, 58% of students who did not require

remediation obtained a bachelor's degree, compared to between 17% and 37% of remediated students, depending on the type and intensity of remedial course work.¹⁸

College Completion Rates

Although the percentage of students graduating in six years from a four-year institution has improved over the past two decades, there is still a large gap between the percentage of students who enroll freshman year and those who graduate within six years.¹⁹ Data from a 2010 NCES study show that only 58.3% of full-time first-year students who were seeking a bachelor's or equivalent degree at a four-year institution in 2004 completed their degree within six years.²⁰ This finding does not account for students who had transferred to a different university from where they began their freshman year.

Failing to complete college within six years is financially detrimental to both states and the federal government, especially at public colleges and universities. One year's loss in income by students who had been enrolled at four-year institutions beginning in 2002 but did not earn their bachelor's degree within six years was estimated to be approximately \$3.8 billion.²¹ The American Institutes for Research concluded that states spend over \$1.3 billion per year on students who drop out during their freshman year of college.²² Thus, the economic and opportunity losses demonstrate that solutions are needed to increase college completion as well as college preparedness.

Defining College Readiness

College readiness has myriad definitions and descriptions. For example, researchers identify college-ready students as those prepared to succeed in an entry-level, credit-bearing (i.e., nonremedial) course.^{23,24} The College Board has suggested that obtaining a first-year grade point average (FYGPA) of a B- or higher is indicative of college readiness.²⁵ College readiness is influenced by both cognitive and academically based factors, such as study skills, time management, high school grades and noncognitive factors such as motivation. Traditionally, cognitive-based objective measures of student preparation have included college entrance examination (CEE) scores and high school grades (HSGPA).

However, research suggests that academic rigor is a powerful predictor of college success.²⁶ To illustrate, Adelman found that the most advanced math course completed in high school was positively related to college graduation: approximately 83% of calculus takers graduated, compared to 75% of precalculus takers, 60% of trigonometry takers, and 40% for students whose progression ended with Algebra II.²⁷

There is some evidence that increasing academic rigor to achieve college readiness may be more beneficial for African American and Hispanic students. For example, progressing beyond Algebra II increased college graduation rates for students of all ethnicities, but more so for African American students (27.5%) and Hispanic students (18.5%) than for white students (10.4%).²⁸ The benefit of increased rigor for underserved students should become more important as demographics shift and the percentage of Hispanic high school students increases while the percentage of white students decreases.²⁹

While the benefits of increased rigor are promising, one obstacle is course availability. Data indicate that Asian American and white students were more likely to attend high schools offering higher-level math courses than were African American

and Hispanic students, almost one-third of California students attended a high school that did not offer an Advanced Placement Program® (AP®) math course, and about one-third did not attend a school offering an AP science course.^{22,30} Thus, access to rigorous course work must be increased in order for all students to have an opportunity for postsecondary education.

One Approach to Measuring Academic Rigor

The rigor of high school course work is one measure that can provide helpful information regarding a student's academic preparation for academic success in college, yet few tools exist to measure student academic rigor in a standardized way. The College Board's recently constructed Academic Rigor Index (ARI) — created from the SAT® Questionnaire and completed by students registering for the SAT — is a tool that states and districts can use to effectively measure the academic preparation of their students for college.

The College Board analyzed the relationship between students' self-reported high school course information using data from over 67,000 SAT takers and their subsequent first-year college grade point averages to create its Academic Rigor Index (ARI).³¹ Students were asked to provide the high school course title, the grade earned, and whether the course was honors, dual enrollment, or AP.³² With this information, the Index was designed to evaluate the difficulty of a student's academic course work within and across five high school subjects. These subjects include English, math, science, social science/history, and foreign/classical language.³³

The ARI can be a valuable tool for states and districts by providing a quantitative and standardized measure of students' high school course work that can be documented and analyzed to assess college readiness. For example, the ARI can measure differences in academic rigor between schools and districts and also measure these changes over time. States and districts can use the ARI to provide school and districtwide reports that capture the rigor of students' course work and then track that course work over time, including by specific subject areas. Schools with lower rigor scores could be encouraged to increase opportunities for rigorous course taking and measure students' participation in these courses over time. States would also have the ability to conduct their own research measuring course rigor using the ARI and the relationship to outcomes such as college enrollment and graduation that could further inform curriculum design. In addition, as longitudinal data systems are implemented, states could link student course-taking patterns in high school with courses students enroll in at the beginning of their freshman year of college.

The College Board studied the relationship between the ARI and other measures of high school performance such as high school grade point average and SAT scores and between ARI and measures of college performance — enrollment, grades, and retention rates. The results indicated that students who completed more rigorous high school courses accomplished better grades in high school, achieved higher SAT scores, and were more likely to enroll in college.³⁴ These students were also more likely to attend a four-year college, accomplish higher college grades, and continue onto their second year of college studies.³⁵ The research is based solely on samples of student SAT takers, which are likely to contain a greater percentage of higher-achieving students with college aspirations than the overall high school graduate population. Thus, ARI scores should not be applied to the entire population of high school graduates, particularly within states that have a small percentage of students who complete the SAT. However, these studies continue to demonstrate

that students who take more difficult course work in high school are more likely to experience academic success in college.

It is important to understand the limitations of the ARI to ensure its appropriate use. Because the data used to construct the ARI are based on self-reported student information and course titles, including projected courses that students plan to take, the potential exists for students to either intentionally or unintentionally report information that is not or will not be accurate. Self-reported SAT student course work data and actual transcript data have not yet been systematically compared, although a subsequent study will address these data. Additionally, using self-reported course titles can pose challenges, as course content and complexity can differ substantively between courses of the same title within states and districts. The Academic Rigor Index, however, when used to provide high-level district and school data of students' course difficulty, can be a useful tool for states and districts to assess academic preparation of its students for college.

Recommended Actions for State, Local, and Institutional Policymakers

Define College and Career Readiness

Ensuring that all students are college and career ready (CCR) requires a common definition and understanding of what it means to be CCR. States, in partnership with colleges and universities, can create a set of metrics by which to measure CCR. It is important that the dimensions of CCR go beyond the mastery of rigorous content and include skills and dispositions that students need to be prepared for both postsecondary education and careers. The elements of any definition should guide the development and evaluation of policy and practice at the state and institutional levels.

Determine the expectations for proficiency to ensure rigorous and comparable course work

State and local education agencies and postsecondary institutions need to clearly state the expectations for an acceptable level of performance in the content areas. State and institutional policies need to reflect these decisions for sustainability. If we are to ensure that all students have the opportunity and access to what is necessary to be prepared for both college and career, the expectations must be clear and the measures transparent. Measures must provide opportunities for students to demonstrate competence in multiple settings, such as the classroom, workplace, and/or within the community.

Decrease the need for remedial courses

Through the development and implementation of state-level policies, states, school districts, and postsecondary institutions must address the increasing need for remedial programs for students entering postsecondary institutions.

The following steps can assist in this process:

- Review existing policies to determine the differences across institutions/systems that require students to take remedial courses.
- Analyze student data (e.g., enrollment, placement tests, success rates in remedial, and credit-bearing courses) to determine if existing policies adequately address the problem(s).
- Share data from the colleges and universities to feeder high schools to identify those areas where the K–12 system can improve the readiness of their students to succeed in college.

Align high school graduation requirements to college entrance requirements

As states continue their work toward implementing the Common Core State Standards, it will be critical for colleges and universities to articulate the content of English and math courses with these standards. This clarity will increase the likelihood that more students will enter college prepared to succeed in entry-level, credit-bearing courses.

Establish and support partnerships between K–12, higher education and adult education to increase college and career readiness

A decline in state revenues over the past several years calls for increased efficiency on the use of state resources. The collaboration across sectors not only holds potential for leveraging existing resources but also provides the opportunity to increase the preparedness of all students entering a postsecondary program (e.g., certificate, associate, and bachelor's). The likelihood of these students completing a program of study will increase if they enter college prepared to succeed.

Build data systems to inform state and institutional policy

Over the past several years, states have invested resources to design data systems that connect early childhood through the labor market. While much work remains to be done, these systems are essential to providing information on student readiness from pre-K to career. These same systems can also provide information to help states and institutions evaluate whether resources are addressing the problem areas (e.g., success rates for students articulating across institutions, college completion rates, and success in the workplace).

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Endnotes

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